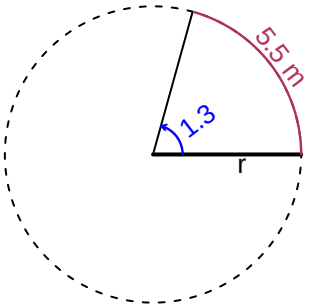
Name: Date:

Trig Final (TEST v680)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

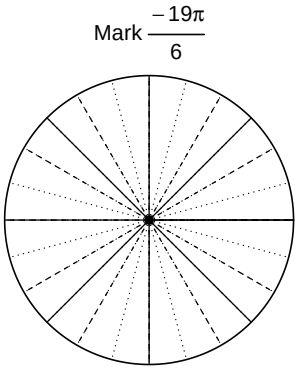
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 5.5 meters. The angle measure is 1.3 radians. How long is the radius in meters?

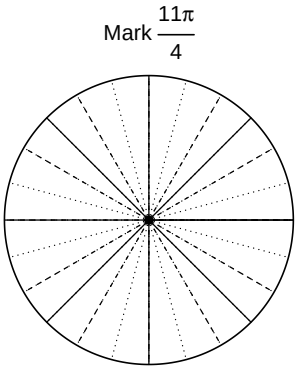


Question 2

Consider angles $\frac{-19\pi}{6}$ and $\frac{11\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-19\pi}{6}\right)$ and $\sin\left(\frac{11\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\cos(-19\pi/6)$



Find $\sin(11\pi/4)$

Question 3

If $\tan(\theta) = \frac{72}{65}$, and θ is in quadrant III, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 8.59 meters, a midline at $y = -4.16$ meters, and a frequency of 3.07 Hz. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).